VALUE MANAGEMENT IN CONSTRUCTION PROJECT

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ABSTRACT

Value Management (VM) is a structured framework that facilitates effective decision making regarding the "best value". One of the major success factors of VM in achieving better project objectives is through the provision of beneficial input by multi-disciplinary team members being involved in critical decision-making discussions during the early stage of construction projects.\textsuperscript{[3]}

This paper presents the application of VM, particularly as a decision-making tool in design and builds construction projects for strengthening and rehabilitation of buildings, especially focussing on the better optimization of construction cost, promoting more efficient and effective constructability.

1. Introduction

Value management (VM) is a service which maximizes the functional development from concept to completion, through the comparison and audit of all decisions against a value system determined by the client or customer. Value management is an integrated, organised and structured process, led by an experienced facilitator and broken down into various stages to enhance the value of a construction project, not necessarily only by cutting costs. VM is a systematic multidisciplinary effort made to enhance the value of a

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construction project in many other ways than just cutting on costs. The best time to implement it is in the early development phases on a project. Optimal benefits will be obtained on larger and more complex projects. The most commonly used stages and phases into which VM is divided is the: Pre-study phase, Information stage, creative phase, evaluation phase, development phase, presentation phase and post-study phase.

There are various definitions for Value management. Some of the definitions that are commonly used to describe the term “value management” are:[5,8,10]

- The *Australian and New Zealand Standard AZ/NZS 4183:1994* defines VM as “a structured, and analytical process which seeks to achieve value for money by providing all the necessary functions at the lowest total cost consistent with the required levels of quality and performance.”
- “*Value management is a systematic and structured process of team based decision making.* It aims to achieve best value for a project by defining those functions required to achieve the value objectives and delivering those functions at the least cost (whole life cost or resource use), consistent with the required quality performance” (www.alabc.org.uk, access 13.05.2009)
- Norton (1995:11) describes VM as a systematic, multi-disciplinary effort directed towards analysing the functions of projects for the purpose of achieving the best value at the lowest overall life cycle costs.

The *Value management definition* in last decades is can be identified with *five keywords or phrases*, as:

**Systematic process:** It has a definite beginning and end and it differs from cost reduction exercises which are normally unstructured and conducted in an informal way. This process is referred to as the job plan which consists of a sequence of steps that guide the VM team through the problem solving process.

**Multi-disciplinary effort:** A group of individuals are brought together to analyse all aspects of the project that are studied. They all work together as a group under the leadership and guidance of the VM facilitator. Most projects make use of various disciplines because no one individual is an expert in every area of the construction project.

**Functions:** Function analysis is at the basis of VM and this is what separates VM from other “cost cutting” programs. But in VM the question of what does it do and what is the function that it seeks to achieve is asked. VM must be undertaken without compromising the quality, reliability, safety and aesthetic features that the client requires.

**Value:** The main function of VM is not to reduce costs but to improve value. Value is made up by balancing cost, time and function/quality of the product/project. Value can also be seen as the benefit the client or the occupants of such a building or structure enjoys. According to Norton (1995:14) there are three major ways to improve value by applying VM:

- To provide for all the required project functions but at a lower cost;
- To provide additional functions without increasing the cost;
- To provide additional functions and at the same time to lower the cost;
Life cycle costs: It is the present value of the total cost of the building/asset over its entire operating life and includes the initial capital and construction costs, operating and maintenance costs and the cost or the benefit of eventual disposal of the asset.

All decisions are examined against a value system determined by the owner or developer of the project. Both VM and cost management are important on a project and there are important links between them. When these two activities are combined the total combined effect is bigger than the sum of the individual effects.

2. The difference between VM and cost management

Cost management does not make any major changes to the scope and concept of a project whilst VM looks holistically at the project as a whole and scope changes are often considered when conducting a VM study. The key differences are that VM is positive. It focuses on the value rather than the cost, seeking to achieve a balance between quality, life cycle costs and time. VM is also structured, accountable and seeks to maximise the creative potential of all project participants. VM on the other hand is beneficial to cost management because it lists ideas that could possibly save costs even if it is only at a later stage. The bottom line is that VM and cost management services should be integrated into a total project economics service to obtain optimal benefits from it.[7]

3. Life cycle costing

Life cycle costing is a method for economic evaluation which considers the costs applicable to the total life of the asset. The costs that are taken into account are the following:

- Initial investment cost consisting of site costs, professional fees and capital cost
- Energy costs
- Operation and maintenance costs
- Replacement of components costs
- Occupancy costs
- Alterations costs
- Taxation costs
- Salvage revenue and disposal costs.

In VM the life cycle costing is used as an evaluative tool. It can assess competing design alternatives, consider costs of ownership over the economic life of each alternative etc all expressed in present value. The method to bring all the costs to a comparable value is known as “discounting”. The three most common methods are:

- Net present value (NPV)
- Internal rate of return (IRR)
- Annual equivalent value (AEV).
3. Before initiating a VM study have to consider the follow factors:

- The potential for a value improved outcome that is perceived;
- The stage of the project development cycle;
- The need to have involvement and broad representation;
- The benefits that will be obtained from involving the key stakeholders;
- The availability of the stakeholders.
- The costs of such a study.

4. Types of the projects that are most suitable for VM

Norton et. al (1995:18) identified the following types of projects that will benefit the most from VM:

- **Costly projects**: VM can result in savings of up to 5-15% of the total costs involved on the project and therefore it is very cost effective to apply VM to higher cost projects.
- **Complex projects**: With a VM study one has the opportunity to get expert second opinions, especially if there are members on the team that are independent from the original design team. On complex projects it is vital to get expert opinions. By using VM, attention can be given to complex issues.
- **Repetitive projects**: When the same type of building/asset needs to be build in many different locations, the utilisation of VM becomes very cost effective because cost reduction and ideas that add value to the project can be incorporated into all the buildings to be build later on.
- **Unique projects** with new technology elements and few precedents. The reason for using VM in the above type of projects is similar to complex projects. It relates to the obtaining of expert opinions.
- **Projects with very restricted budgets**: For these projects it is imperative to get maximum value for the least amount of money. VM seeks to eliminate unnecessary costs.
- **Projects with compressed design programmes**: M should be properly coordinated with the construction programme to minimise time spent on it. VM can come up with innovative ideas to relieve pressure on design programmes and accelerate programmes.
- **High visibility projects**: These are projects sponsored by the government or environmentally sensitive projects. It is important that as little as possible goes wrong on these projects to avoid the media embarrassing the parties involved on the project.

VM is not restricted to the types of projects mentioned above, but can be applied to any project/building or asset. VM can be applied to parts of buildings or subdivisions of projects. The general feel is that VM is more beneficial on larger projects due to the fact that there are certain costs associated with a VM study.
5. The benefits of a VM study

VM has a lot of advantages ranging from financial benefits, to helping to build the morale of the professional team. VM will affect everyone associated with the project, otherwise known as stakeholders. The client seeks to achieve value for money, whilst the users want a product that meets their needs as effectively as possible. The project managers are to ensure that the project is on time and falls within the budgetary constraints, the contractor wishes to provide a service which will afford them an adequate profit and the designers are keen to meet the expectations of the client whilst complying with certain standards and performance criteria. VM can address most of these needs directly or indirectly, thus bringing a degree of satisfaction to all the stakeholders involved.

Financial benefits of VM

Here follows a brief list of some of the benefits of VM that is somehow directly or indirectly connected with optimising the value for money for a project (Norton et. al, 1995: 29,159) (Locke et.al 1994:5):

- VM creates a clearer focus on the project objectives;
- VM works towards arriving at a more effective design;
- Identification of alternative methods of construction and favourable adjustments to the construction timeline;
- Discovery and discussion of project issues, constraints and risks involved;
- Clearer project brief and decision making;
- Identifies and removes unnecessary costs associated with the project;
- VM deals with lifecycle costs also, not only initial project cost and provides an authoritative review of the project in its totality and not just a few elements. Future profitability can also be assessed if the lifecycle costs are known;
- Decisions are made with greater confidence because it can be supported by data and defined performance criteria;
- All options, alternatives and innovative ideas are considered;
- VM seeks to obtain maximum efficiency ratios;
- Over specification is addressed and an improved building programme can be developed leading to time being saved and ultimately savings in cost;
- If properly implemented it can identify possible problems early on in the project;

It provides management with authoritative evaluations and supporting information of the project brief or design and their related capital and operation costs. Savings in costs of between 10-15% of total project costs can be achieved with the correct implementation of VM.

It is important to note that for these benefits to be fully realised it is important to implement VM as soon as possible on a project. The figure below illustrates this concept. The costs to change are much lower when the project is still in its development/design phase and the cost reduction potential is the highest early on in the project development stages.

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6. Conclusions

VM is a process whereby the project is evaluated and scrutinised to obtain maximum value for money by following a certain methodology, the process being led by an experienced facilitator. The economy has changed rapidly over the past few decades and intensifying competition has placed a growing importance and demand on increased efficiency, effectiveness and value for money. VM addresses these three facets effectively and directly. VM is a truly beneficial practice that should form an integral part of a project (especially larger and more complex projects) and that it is worth investing some time and effort in the VM workshop and the process as a whole.

LITERATURE